SCS ENGINEERS

# Annual CCR Landfill Inspection
# OML Existing Landfill
# OML Expansion Phase 1

## Ottumwa-Midland Landfill

Prepared for:

Interstate Power and Light Company
Ottumwa-Midland Landfill
15300 130th Street
Ottumwa, Iowa 52501

Prepared by:

**SCS ENGINEERS**
2830 Dairy Drive
Madison, Wisconsin 53718-6751
(608) 224-2830

December 2016
File No. 25216073.00

**Offices Nationwide**
**www.scsengineers.com**

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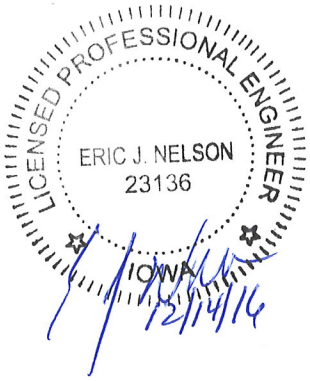
# PE CERTIFICATION




I, Eric J. Nelson, hereby certify that this Initial Annual CCR Landfill Inspection Report meets the requirements of 40 CFR 257.84(b)(2), was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

12/14/2016

(signature) (date)

ERIC J. NELSON

(printed or typed name)

License number 23136

My license renewal date is December 31, 2016.

Pages or sheets covered by this seal:
ANNUAL CCR LANDFILL INSPECTION - DECEMBER 2016
IPL OTTUMWA MIDLAND LANDFILL

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# 1.0 INTRODUCTION

## 1.1 PURPOSE

SCS Engineers (SCS) completed an annual inspection of the Interstate Power and Light Company (IPL) Ottumwa-Midland Landfill (OML) in Ottumwa, Iowa. The annual inspection was completed in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) rule, 40 CFR 257 Subpart D, in particular 257.84(b)(1). According to 40 CFR 257.84(b)(1), an annual inspection by a qualified professional engineer is required for all existing and new CCR landfills and any lateral expansion of a CCR landfill. The purpose of the annual inspection is to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:

- A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of inspections by a qualified person, and results of previous annual inspections); and

- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

This report has been prepared in accordance with 40 CFR 257.84(b)(2) to document the annual inspection.

## 1.2 BACKGROUND

The OML includes an active CCR landfill, which currently consists of two CCR units:

- OML Existing Landfill
- OML Expansion Phase 1

The inspection requirements in 40 CFR 257.84(b)(1) apply to the two existing (active) CCR units listed above.

At the time of the inspection, the active CCR units were in various stages of development and use as described in the table below.

| CCR Unit | CCR Rule Status | Basis for Status |
|---|---|---|
| OML Existing Landfill | Existing, Accepting CCR | Module received CCR before and after the effective date of the CCR Rule. |
| OML Expansion Phase 1 | Existing, Accepting CCR | Module construction was completed in September 2015 and began receiving CCR in October 2016 after state approval of the construction. |

# 2.0 ANNUAL INSPECTION

Mr. Eric Nelson of SCS completed an annual inspection of the active CCR units at OML, including the Existing Landfill and Expansion Phase 1 on October 24, 2016. Mr. Nelson is a licensed professional engineer in Iowa and holds a Bachelor's of Science degree in Geological Engineering. He has over 18 years of experience in the design, construction, and operation of solid waste disposal facilities. This was the second annual inspection of the Existing Landfill and Expansion Phase 1 at OML. The scope of the annual inspection is described in **Sections 2.1** and **2.2**. The results of the annual inspection are discussed in **Section 3.0**.

## 2.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for OML prior to the visual inspection discussed in **Section 2.2**. Information reviewed by SCS included operating record materials provided by IPL and the information posted on Alliant Energy's CCR Rule Compliance Data and Information website for the OML facility. These materials reviewed are summarized in **Table 1**.

## 2.2 VISUAL INSPECTION

SCS completed a visual inspection of the Existing Landfill and Expansion Phase 1 at OML to identify signs of distress or malfunction of the CCR units. SCS also provided oversight of the recent construction activities for Phase 1.

The visual inspection included observations of the following:

- CCR placement areas including active filling areas, intermediate cover areas, and exterior non-CCR berms or slopes.
- Leachate collection and removal system components including visible leachate drainage layer materials, leachate vaults, cleanouts, and the leachate storage lagoon.
- Contact water run-off management features including internal contact water drainage features and Temporary Contact Water Basin 1/2.
- Non-contact storm water run-on and run-off control features including swales and sedimentation basins located adjacent to active fill areas but outside the landfill limits.
- Groundwater underdrain system components including the visible underdrain discharge pipes.

# 3.0 INSPECTION RESULTS

The results of the annual inspection, along with a description of any deficiencies or releases identified during the visual inspection, are summarized in the following sections.

## 3.1 CHANGES IN GEOMETRY

This is the second annual inspection of the Existing Landfill and Expansion Phase 1 at the OML facility completed under 40 CFR 257.84(b)(1). No apparent changes in geometry were noted that would indicate distress or malfunction of the CCR units at the facility. All changes in geometry observed during the annual inspection were the result of planned CCR filling or intermediate soil cover placement activities.

At the time of the visual inspection, active CCR placement was evident in the Existing Landfill. CCR placement is limited to the west half of the current top slope of the CCR unit. Intermediate cover is in place along a portion of the north, west, and east slopes; the majority of the south slope; and all but the active CCR placement area on the top slope.

At the time of the visual inspection, active CCR placement was evident in Expansion Phase 1. CCR placement is limited to the north half of the bottom area of the CCR unit. The southern half of the bottom area of the CCR unit and the interior slopes (east, west, and south slopes) of the lined area are covered with a temporary rain cover, and no CCR has been placed in these areas.

## 3.2 CCR VOLUMES

The approximate volume of CCR contained in each of the CCR units at the time of the inspection is summarized below. A description of how the estimate was developed and the sources used are also summarized below.

| CCR Unit | Estimated Volume of CCR in Place | Basis for Estimate and Source |
|---|---|---|
| OML Existing Landfill | 806,570 cubic yards | Estimated volume based on existing waste volumes as of 12/17/2015 plus tons disposed between 12/18/2015 and 10/24/2016. Tonnage converted to cubic yards assuming an average unit weight for CCR of 0.9 tons per cubic yard (39,570 cubic yards). It was assumed all waste from this period, with the exception of waste from Prairie Creek generating facility, was disposed of in the Existing Landfill. Disposal records for 12/18/2015 to 10/24/2016 provided by IPL. |
| OML Expansion Phase 1 | 14,120 cubic yards | Estimated volume based on existing waste volumes as of 12/17/2015 plus tons disposed between 12/18/2015 through 10/24/2016. Tonnage converted to cubic yards assuming an average unit weight for CCR of 0.9 tons per cubic yard (4,120 cubic yards). However, only waste generated from Prairie Creek generating station was assumed to be disposed of in Expansion Phase 1 for this time period. Disposal records for 12/18/2015 to 10/24/2016 provided by IPL. |

## 3.3 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of an actual or potential structural weakness of the CCR unit. The visual inspection included a review of CCR fill areas including the top slopes, internal side slopes, external side slopes, and internal ramps/haul roads for the presence of the following conditions:

- Signs of surface movement or instability:
  - Sloughing, slumping, or sliding
  - Surface cracking
  - Slopes in excess of 3 horizontal to 1 vertical (3H:1V)
  - Toe of slope bench movement
  - Evidence of inadequate compaction of exposed CCR
- Inappropriate vegetation growth
- Animal burrows
- Erosion damage
- Unusual surface damage caused by vehicle traffic

### 3.3.1 Signs of Surface Movement or Instability

No signs of surface movement or instability were noted during the inspection.

Areas where slopes steeper than 3H:1V were noted during the previous annual inspection have been addressed. The areas have been filled or graded to flatten the slope.

### 3.3.2 Inappropriate Vegetation Growth

No inappropriate vegetation growth that was causing apparent distress or malfunction of the CCR units was noted during the inspection.

### 3.3.3 Animal Burrows

No animal burrows that were causing apparent distress or malfunction of the CCR units were noted during the inspection.

### 3.3.4 Erosion Damage

Mild gully erosion of the Existing Landfill intermediate cover materials was noted during the inspection. The erosion was observed in the intermediate cover on the west slope of the Existing Landfill to the southwest of the active fill area in the area between the top fill area access road and the road to the leachate vault installed for Expansion Phase 1.

The erosion in this area is not currently considered an operating deficiency since it is unlikely to have a significant impact on the function of the CCR unit.

The mild gully erosion of the Existing Landfill intermediate cover materials that was noted during the previous inspection in the following locations has been repaired:

- At the east end of the diversion berm on the south slope
- On the access ramp above the west end of the diversion berm on the south slope
- On the north slope adjacent to the boundary between the Existing Landfill and Expansion Phase 1

The erosion of the bottom ash ramp that was noted during the initial inspection remains; however, no significant changes to the conditions in this area were noted during the current inspection. Bottom ash from the ramp has eroded into the area along the north side of the ramp and into the culvert that allows the free flow of contact water under the ramp in Expansion Phase 1. The condition is not prohibiting the proper management of contact water because a temporary rain cover is installed over the south end of the culvert, so the culvert serves no current function. Non-contact water generated in the temporary rain cover area is properly managed by facility staff by pumping it to the adjacent sedimentation basin to the north.

Based on the current inspection, the conditions noted are not considered an operating deficiency since they are unlikely to have a significant impact on the function of the CCR unit. However, erosion and the resulting deposit of sediment in surface water and contact water management

features have the potential to cause ponding of water that may impact the overall stability of the CCR unit. Additional observation of these areas and repair is recommended to ensure that the conditions observed during the visual inspection, or similar future conditions, are addressed and do not have an impact on the overall stability of the CCR unit.

No other erosion damage was noted during the inspection.

#### 3.3.5 Unusual Surface Damage Caused by Vehicle Traffic

No unusual surface damage caused by vehicle traffic was noted during the inspection.

## 3.4 DISRUPTIVE CONDITIONS

### 3.4.1 Existing Disruptive Conditions

#### 3.4.1.1 Current Inspection

No existing conditions that were disrupting the operation and safety of the CCR units were noted during the annual inspection.

#### 3.4.1.2 Previous Inspection

No existing conditions that were disrupting the operation and safety of the CCR units were noted during the previous inspection.

### 3.4.2 Potentially Disruptive Conditions

#### 3.4.2.1 Current Inspection

No potentially disruptive conditions were noted during the annual inspection.

#### 3.4.2.2 Previous Inspection

No potentially disruptive conditions were noted during the previous inspection.

## 3.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

The most significant change to the facility since the previous annual inspection is the initiation of CCR placement activities in Expansion Phase 1 since the Iowa Department of Natural Resources approved the CCR unit construction in January 2016. Previously, only CCR used in the construction of the ramp and operating pad in the cell had been placed in this unit.

No changes to site conditions that appear to have the potential to affect the stability or operation of the facility were noted during the inspection of the Existing Landfill or Expansion Phase 1.

# 4.0 FUTURE INSPECTIONS

## 4.1 EXISTING CCR LANDFILL

As stated in 40 CFR 257.84(b)(4), the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the inspection report is the basis for establishing the deadline to complete the next subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. The owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record.

The next annual inspection of the Existing Landfill and Expansion Phase 1 must be completed within 1 year of the placement of this inspection report in the operating record for the OML facility.

## 4.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS

As discussed above, all of the CCR units at the OML facility are considered existing CCR units. The initial annual inspection for CCR units constructed in the future must be completed within 14 months of the initial receipt of CCR in the module per 40 CFR 257.84(b)(4).

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**TABLE 1**

Operating Record Summary

**Table 1. Operating Record Summary**
**IPL Ottumwa-Midland Landfill / Ottumwa, Iowa**
**SCS Engineers Project #25216073.00**

| | Record Date | Source |
|---|---|---|
| Location Restrictions | | |
| No materials in operating record as of 12/1/16 | | Website |
| | | |
| Design Criteria | | |
| No materials in operating record as of 12/1/16 | | Website |
| | | |
| Operating Criteria | | |
| CCR Fugitive Dust Control Plan | 9/23/2015 | Website |
| 7-Day Inspection | 10/15/2015 | IPL |
| 7-Day Inspection | 10/22/2015 | IPL |
| 7-Day Inspection | 10/29/2015 | IPL |
| 7-Day Inspection | 11/5/2015 | IPL |
| 7-Day Inspection | 11/12/2015 | IPL |
| 7-Day Inspection | 11/18/2015 | IPL |
| 7-Day Inspection | 11/25/2015 | IPL |
| 7-Day Inspection | 12/2/2015 | IPL |
| 7-Day Inspection | 12/9/2015 | IPL |
| 7-Day Inspection | 12/16/2015 | IPL |
| 7-Day Inspection | 12/23/2015 | IPL |
| 7-Day Inspection | 12/30/2015 | IPL |
| 7-Day Inspection | 1/6/2016 | IPL |
| 7-Day Inspection | 1/13/2016 | IPL |
| Initial Annual CCR Landfill Inspection | 1/18/2016 | Website |
| 7-Day Inspection | 1/20/2016 | IPL |
| 7-Day Inspection | 1/27/2016 | IPL |
| 7-Day Inspection | 2/3/2016 | IPL |
| 7-Day Inspection | 2/10/2016 | IPL |
| 7-Day Inspection | 2/17/2016 | IPL |
| 7-Day Inspection | 2/24/2016 | IPL |
| 7-Day Inspection | 3/2/2016 | IPL |
| 7-Day Inspection | 3/9/2016 | IPL |
| 7-Day Inspection | 3/16/2016 | IPL |
| 7-Day Inspection | 3/23/2016 | IPL |
| 7-Day Inspection | 3/30/2016 | IPL |
| 7-Day Inspection | 4/6/2016 | IPL |
| 7-Day Inspection | 4/13/2016 | IPL |
| 7-Day Inspection | 4/20/2016 | IPL |
| 7-Day Inspection | 4/27/2016 | IPL |
| 7-Day Inspection | 5/4/2016 | IPL |
| 7-Day Inspection | 5/11/2016 | IPL |
| 7-Day Inspection | 5/18/2016 | IPL |
| 7-Day Inspection | 5/25/2016 | IPL |
| 7-Day Inspection | 6/1/2016 | IPL |
| 7-Day Inspection | 6/8/2016 | IPL |
| 7-Day Inspection | 6/15/2016 | IPL |
| 7-Day Inspection | 6/22/2016 | IPL |

**Table 1. Operating Record Summary**
**IPL Ottumwa-Midland Landfill / Ottumwa, Iowa**
**SCS Engineers Project #25216073.00**

| | Record Date | Source |
|---|---|---|
| 7-Day Inspection | 6/29/2016 | IPL |
| 7-Day Inspection | 7/6/2016 | IPL |
| 7-Day Inspection | 7/13/2016 | IPL |
| 7-Day Inspection | 7/20/2016 | IPL |
| 7-Day Inspection | 7/27/2016 | IPL |
| 7-Day Inspection | 8/3/2016 | IPL |
| 7-Day Inspection | 8/10/2016 | IPL |
| 7-Day Inspection | 8/17/2016 | IPL |
| 7-Day Inspection | 8/24/2016 | IPL |
| 7-Day Inspection | 8/31/2016 | IPL |
| 7-Day Inspection | 9/7/2016 | IPL |
| 7-Day Inspection | 9/14/2016 | IPL |
| 7-Day Inspection | 9/21/2016 | IPL |
| 7-Day Inspection | 9/28/2016 | IPL |
| Run-On and Run-Off Control Plan | 9/29/2016 | Website |
| 7-Day Inspection | 10/5/2016 | IPL |
| 7-Day Inspection | 10/12/2016 | IPL |
| 7-Day Inspection | 10/19/2016 | IPL |
| Annual CCR Fugitive Dust Control Report | 11/30/2016 | Website |
| | | |
| Groundwater Monitoring | | |
| No materials in operating record as of 12/1/16 | | Website |
| | | |
| Closure/Post-Closure Care | | |
| Initial Closure Plan | 9/29/2016 | Website |
| Post-Closure Care Plan | 9/29/2016 | Website |

Notes:
1) Items sourced to the Website are from Alliant Energy's CCR Rule Compliance Data and Information website as of 12/01/16.
   See http://ccr.alliantenergy.com/Ottumwa/Landfills/index.htm
2) Items sourced to IPL are from the facility Operating Record as of the date of inspection.

I:\25216073.00\Reports\2016 Federal Inspection\Operating Record Files\[Table 1 Operating Record Summary_OML.xlsx]Summary